

REMARKS/ARGUMENTS

Claims 11-20 are pending in this application. By this Amendment, Applicant amends Claims 11-13, 15, 16, and 20.

Claims 11, 12, 16, and 17 were rejected under 35 U.S.C. § 102(b) as being anticipated by Konishi et al. (U.S. 5,635,115). Claims 13, 14, and 19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Konishi et al. in view of Bureau et al. (U.S. 6,492,194). Claim 15 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Konishi et al. in view of Bureau et al., and further in view of Hikata et al. (U.S. 6,376,915). Claim 18 was rejected under 35 U.S.C. § 103(a) as being obvious of Konishi et al. Claim 20 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Konishi et al. in view of Komatsu et al.(JP 2000-306810). Applicant respectfully traverses the rejection of Claims 11-20.

Claim 11 has been amended to recite:

A method of manufacturing an electronic component comprising the steps of:

a mounting step including mounting on a collective mounting substrate a plurality of electronic functional elements, each of the plurality of electronic functional elements having a substrate and an electronic functional portion provided on the substrate;

an arranging step including arranging a resin film on the electronic functional elements mounted on the collective mounting substrate;

a reduced-pressure packaging step including putting the electronic functional elements and the resin film mounted on the collective mounting substrate in a bag that has a gas-barrier property, and hermetically sealing the contents inside the bag by closing an opening of the bag after depressurizing the inside of the bag;

a sealing step including sealing the electronic functional elements with a sealing resin member formed from the resin film by causing the resin film to infiltrate between the electronic functional elements mounted on the collective mounting substrate; and

a dividing step including dividing the collective packing mounting having the resin-sealed electronic functional elements into individual electronic functional elements. (emphasis added)

The Examiner alleged that Figs. 2A-2E, 4A-4F, 7A, and 17A-17C of Konishi et al.

teach all of the features recited in Applicant's Claim 11. Particularly, the Examiner alleged, "Konishi et al. discloses a method for producing a semiconductor device comprising:

- a. a number of light emitting devices simultaneously produced by using a multi-cavity circuit board 10;
- b. states of a sealing resin 20;
- c. heat resistance vacuum suction sack 38a..., under airtight conditions ... heated while vacuumized with a vacuum pump; ... a sealing resin can be formed; and
- d. the multi-cavity circuit board 10 is divided into respective cavities."

Applicant's Claim 11 has been amended to recite the feature of "a reduced-pressure packaging step including putting the electronic functional elements and the resin film mounted on the collective mounting substrate in a bag that has a gas-barrier property, and hermetically sealing the contents inside the bag by closing an opening of the bag after depressurizing the inside of the bag." Support for this feature is found, for example, in paragraphs [0051]-[0059] of Applicant's originally filed Substitute Specification and in Figs. 1A-1C, 3, and 4 of Applicant's originally filed drawings.

In contrast to Applicant's Claim 11, col. 14, lines 22-28 of Konishi et al. disclose, "As shown in FIG. 7B, one end of a tube 38a is connected to an opening of the vacuum suction sack 38b under airtight conditions. Then, as shown in FIG. 7C, the vacuum suction sack 38a containing the multi-cavity circuit board 10, the sealing resin sheet 29, and the peeling sheet for surface finish 31 is placed in an oven 38c and is heated while vacuumized with a vacuum pump 38d. By vacuumizing the vacuum suction sack 38a, the surface of the sealing resin can be formed into a desired state (e.g., mirror state, matte state) without air bubbles from being mixed with the molten resin."

Thus, Konishi et al. teaches that the step of sealing the resin is performed while the vacuum suction sack 38a, which the Examiner alleged corresponds to the bag recited in Applicant's Claim 11, is open and connected to the vacuum pump 38d.

In Konishi et al., when heat curing is performed while the vacuum suction sack

38a is connected to the vacuum pump 38d, gases that are produced during the heat curing process are drawn to the vacuum pump side by the suction of the vacuum pump 38d, and an uneven pressure distribution occurs inside of the bag. This uneven pressure distribution causes voids to occur in the resin which results in defective sealing of the electronic functional elements. To the contrary, according to the invention recited in Applicant's Claim 11, since the contents inside the bag are hermetically sealed prior to the sealing step and are not subjected to a vacuum pressure during the sealing step, an even pressure distribution is produced inside the bag. As a result, voids are not produced in the sealing resin member during the sealing step.

Konishi et al. fails to teach or suggest that the vacuum suction sack 38a could or should be hermetically sealed before the step of sealing the resin, and certainly fails to teach or suggest the features of "a reduced-pressure packaging step including putting the electronic functional elements and the resin film mounted on the collective mounting substrate in a bag that has a gas-barrier property, and hermetically sealing the contents inside the bag by closing an opening of the bag after depressurizing the inside of the bag" and "a sealing step including sealing the electronic functional elements with a sealing resin member formed from the resin film by causing the resin film to infiltrate between the electronic functional elements mounted on the collective mounting substrate" as recited in Applicant's Claim 11.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of Claim 11 under 35 U.S.C. § 102(b) as being anticipated by Konishi et al.

In addition, it would not have been obvious to modify the method of Konishi et al. to include a step of hermetically sealing the contents inside the bag by closing an opening of the bag after depressurizing the inside of the bag as recited in Applicant's Claim 11 because Konishi et al. fails to teach or suggest any structure whatsoever would have been capable of hermetically sealing the vacuum suction sack 38a.

Bureau et al., Hikata et al., and Komatsu et al. were relied upon to allegedly cure various deficiencies of Konishi et al. However, Bureau et al., Hikata et al., and Komatsu et al. clearly fail to teach or suggest the features of "a reduced-pressure packaging step

including putting the electronic functional elements and the resin film mounted on the collective mounting substrate in a bag that has a gas-barrier property, and hermetically sealing the contents inside the bag by closing an opening of the bag after depressurizing the inside of the bag” and “a sealing step including sealing the electronic functional elements with a sealing resin member formed from the resin film by causing the resin film to infiltrate between the electronic functional elements mounted on the collective mounting substrate” as recited in Applicant’s Claim 11. Thus, Bureau et al., Hikata et al., and Komatsu et al. fail to cure the deficiencies of Konishi et al. described above.

Accordingly, Applicant respectfully submits that Konishi et al., Bureau et al., Hikata et al., and Komatsu et al., applied alone or in combination, fail to teach or suggest the unique combination of features and method steps recited in Applicant’s Claim 11.

In view of the foregoing amendments and remarks, Applicant respectfully submits that Claim 11 is allowable. Claims 12-20 depend upon Claim 11, and are therefore allowable for at least the reasons that Claim 11 is allowable.

In view of the foregoing amendments and remarks, Applicant respectfully submits that this application is in condition for allowance. Favorable consideration and prompt allowance are solicited.

Application No. 10/595,988
July 17, 2009
Reply to the Office Action dated April 29, 2009
Page 10 of 10

The Commissioner is authorized to charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1353.

Respectfully submitted,

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